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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,821	02/07/2007	Sakae Koyata	P35790	2851

7590 01/07/2010

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EXAMINER	
OLSEN, ALLAN W	
ART UNIT	PAPER NUMBER
1792	
MAIL DATE	DELIVERY MODE
01/07/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/561,821	KOYATA ET AL.	
	Examiner	Art Unit	
	Allan Olsen	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-5 and 7-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-5 and 7-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities:

The reference to **volume ratio** in paragraph [0039] is inconsistent with the rest of the specification's reference to weight ratio.

It would appear as though paragraph [0040] should be amended as follows:

[0040] Next, the acid etching solution within the acid etching tank was stirred, while the wafer was immersed, and the ~~**alkali**~~ acid etching was performed so that the removal depth of the wafer becomes 20 μm in the total of the front and rear surfaces. The wafer having completed the acid etching was immersed into [[a]] ultrapure water, and was treated with rinse.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3-5 and 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2003-100701 (Masafumi et al., hereinafter, Masafumi) in view of JP 2002-203823 (Takashi et al., hereinafter, Takashi).

Masafumi teaches a method for processing of a silicon wafer, comprising: subjecting a cleaned, lapped silicon wafer having degraded superficial layers to an etching process with an aqueous acid etching solution and an alkali etching solution to obtain an etched wafer. Masafumi teaches providing a mirror-polish to the front surface of the etched wafer and cleaning the front surface mirror-polished wafer. Masafumi teaches the alkali etching is performed after the acid etching (see, for example, abstract). Masafumi teaches the alkali etching is performed by immersing the silicon wafer into the alkali etching solution. Masafumi teaches the aqueous acid etching solution is composed of hydrofluoric acid and nitric acid, and may contain phosphoric acid (see, for example, [0013] and claims 4 and 5).

Regarding claim 4, Masafumi teaches a providing the front surface with a mirror-polish and the rear surface with a slight-polish (see for example, claim 7 and [0008]).

Regarding claim 7, Masafumi teaches the acid and the alkali etching solutions are stored in separate etching tanks (see for example, abstract).

Regarding claim 8, Masafumi teaches a cleaning process is performed between the acid etching process and the alkali etching process (see, for example, [0018]).

Regarding claims 3 and 5, Masafumi does not teach the acid etching solution comprises 30 -40 % phosphoric acid by weight. Masafumi does not teach the acid etching is performed by a spin-coating method, in which the acid etching solution is dripped on the silicon wafer, and said wafer is spun so that said dripped acid etching solution is expanded on the whole wafer surface.

Takashi teaches a similar process wherein an acid etching is performed by a spin-coating method using an acidic solution that comprises 30-40% phosphoric acid by weight.

It would have been obvious to one skilled in the art to incorporate the 30-40% by weight phosphoric acid of Takashi into the method of Masafumi because Takashi (especially, in paragraphs [0014] - [0069]) discloses an invention characterized in that the acid etching solution, like that of Masafumi's is mainly composed of hydrofluoric acid and nitric acid but Takashi teaches adding phosphoric acid in an amount of between 10 to 40 percent by weight in order to reduce the unevenness of the front surface of the wafer and thereby to obtain a satisfactory front surface condition. As this is the same objective of Masafumi, it would have been obvious to use the amount of phosphoric acid taught by Takashi as Masafumi is silent in this regard. Furthermore, it would have been obvious to one skilled in the art to incorporate the spin-coating method of Takashi into the process of Masafumi because Takashi achieves the same results and thereby demonstrates that the spin-coating and immersion processes are functionally equivalent.

Regarding claim 4, Masafumi does not teach performing the rear surface slight-polishing step before the front surface mirror-polishing step.

It would have been obvious to one skilled in the art to carry out the mirror-polishing step last so that the mirror polished surface would not be unnecessarily scratched in subsequent processing steps.

Regarding claims 9 and 10, Masafumi does not teach that a cleaning process is performed between each independent step.

It would have been obvious to one skilled in the art to conduct a cleaning process between each independent step so as not to cross contaminate the materials used in each process step.

Regarding claims 11 and 12, Masafumi does not teach that the rear surface slight-polishing removes less than about 0.3 μm from the rear surface.

It would have been obvious to one skilled in the art to minimize the amount of material removed from rear surface during the slight polishing process in order to maintain the visible distinction between the slight-polished side and the mirror polished side while at the same time preserving as much of the wafer thickness as possible.

Conclusion

Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on August 28, 2009 prompted the new grounds of rejection presented in this Office action. While the documents relied upon

for the new rejections were previously filed, and considered by the examiner, it is noted that the references are not in English and they were considered only to the extent possible. The English language abstracts alone did not contain sufficient information to support a rejection. The translations provided along with the IDS filed August 28, 2009 shed an entirely new light on the documents. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609.04(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allan Olsen whose telephone number is 571-272-1441. The examiner can normally be reached on M, W and F: 1-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Allan Olsen/
Primary Examiner, Art Unit 1792